Does Board Gender Diversity Matter for Sustainable Growth Rate? Evidence from Banking Industry in Vietnam

Pham Tien Minh and Bui Huy Hai Bich*

***Abstract*—This paper examines the impact of board gender diversity on the sustainable growth rate in the banking industry. Since there is not much empirical research on the link between gender diversity and sustainable growth of banks, this is a very important step toward further understanding the impact of female directors on boards in the long run in the financial sector. Using the data of 318 bank-year observations from 30 commercial banks in Vietnam for the 2010–2020 period, we find that gender diversity on boards significantly contributes to banks' sustainable growth rate. Our findings remain unchanged after taking endogeneity issues into consideration and using different measures of board gender diversity. This study adds to the existing literature regarding the banking sector and suggests that banks should concentrate their efforts on hiring more female directors.**

***Index Terms*—Board gender diversity, banking, female directors, sustainable growth rate, Vietnam**

I. Introduction

One of the goals of the United Nations 2030 Agenda for Sustainable Development is gender equality. This is an important factor in determining economic and social progress. Gender equality is also important for global economies and businesses to be competitive, grow, and be ready for the future (Bannò and Nicolardi, 2020). Specially, gender diversity on boards of directors has emerged as a critical issue, attracting much more attention from practitioners, shareholders, policymakers, and academic scholars over the last decade (Ionascu *et al.*, 2018; Arnaboldi *et al.*, 2020). It has become the theme for many related studies (Mukherjee and Sen, 2022), especially after worldwide high-profile corporate scandals (such as Lehman Brothers, the Volkswagen emissions scandal, and the Kobe Steel scandal) and the global financial crisis (Ain and Yuan *et al.*, 2022; Zhu and Husnain, 2022). As awareness of the need for gender diversity at the board level has increased, many developed countries have passed laws and implemented policies to support the appointment of and participation of women on boards (Jyothi and Mangalagiri, 2019; Zhu and Husnain, 2022). As time goes on, emerging economies and the world as a whole have begun to give more thought to the presence of women on boards (Đặng and Houanti, 2020). However, the question of how women in leadership positions can add value to organizations is still the topic of ongoing debate among researchers (Bannò and Nicolardi, 2020). Specifically, despite the fact that there is an increasing body of literature showing that female board members can affect different board decisions and firms' performance (Zhu and Husnain, 2022), the effect of board gender diversity (BGD) on sustainable growth rate (SGR) is poorly understood and unnoticed in previous studies of gender diversity (Ain and Yuan *et al.*, 2022).

This research provides additional insight into the existence and nature of the relationship between BGD and SGR of the banking industry in an emerging economy. Our study is driven by different fronts. First, there are few studies that attempt to establish a linkage between corporate governance and SGR (Mukherjee and Sen, 2019, 2022). More notably, although gender diversity on boards is considered as a crucial alternative mechanism of corporate governance (Adams and Ferreira, 2009; Gul and Srinidhi *et al.*, 2011; Zhu and Husnain, 2022;), extremely few studies have examined the impact of BGD and SGR worldwide (Ain and Yuan *et al.*, 2022). The majority of earlier studies on gender diversity's impact have centered on financial performance (Adams and Ferreira, 2009; Brahma and Nwafor *et al.*, 2021; Carmo and Alves *et al.*, 2022; Ionascu *et al.*, 2018). While financial performance is an important consideration, the value added by gender diversity goes far beyond that (Bannò and Nicolardi, 2020) to include other important aspects of sustainability, like sustainable growth (Ain and Yuan *et al.*, 2022). In fact, focusing solely on profit maximization helps businesses meet their short-term objectives but not their long-term ones in the current globally competitive market; thus, many businesses have been working toward sustainable growth and making it a priority in their long-term strategies (Ain and Yuan *et al.*, 2022).

Second, our study is also motivated by the context of the financial industry, especially in the banking sector. Women in the financial services industry are overwhelmingly concentrated in lower-paying entry-level and middle-management positions and are significantly underrepresented in leadership roles (Owen and Temesvary, 2018). There are a few papers investigating the impact of BGD on corporate performance in the banking industry, but they have not yet achieved a consensus result (Owen and Temesvary, 2018). For example, some prior studies indicated a positive impact of BGD on bank performance (Cardillo and Onali *et al.*, 2021; García-Meca and García-Sánchez *et al.*, 2015). However, according to research by Pathan and Faff (2013), the positive effect of gender diversity on bank performance decreased after the Sarbanes-Oxley Act (2003–2006) and during times of economic crisis (2007–2011). Owen and Temesvary (2018) using panel data of 87 large U.S. banks over the years 1999–2016, even found that gender diversity on boards has a highly non-linear effect on bank performance. Furthermore, although banking authorities have been paying more attention to the issue of gender diversity in recent years, there is a

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scarcity of scholarly literature on the subject in the banking sector overall (Galletta and Mazzù *et al.*, 2022). Moreover, since Vietnam is a developing country whose businesses rely heavily on bank credit for funding, the banking system has been crucial to the country's recent rapid economic development (Vo, 2017). Given the increased importance of the banking system, exploring the impact of BGD on banks' SGR in Vietnamese context is compelling on its own merit. As far as we know, no studies have specifically examined the contribution of female board members to the sustainable growth rate of banks in Vietnam.

The analysis of the related theories also supports the relationship between BGD and corporate sustainability performance (Pareek and Sahu, 2021). According to the agency theory proposed by Jensen and Meckling (1976), BGD improves board independence and its efficacy through better monitoring of management's opportunistic behavior and alleviating agency issues, thereby contributes to enhanced corporate sustainable performance (Elmagrhi and Ntim *et al.*, 2019). In addition, the resource dependency theory argues that gender-diverse boards have access to a more diversified set of resources, which in turn boosts the board's operational and social performance (Ali and Ng, 2014). However, studies on the potential impact of specific board attributes, such as the gender diversity in boardrooms, on the sustainability performance of corporations are scarce (Pareek and Sahu, 2021). A few empirical research has demonstrated BGD's significance in explaining organizations' sustainability performance. For example, Zhu and Husnain (2022) found that gender diversity on boards has a significant positive effect on firm sustainability performance in a sample of Pakistani listed firms from 2005 to 2020. They suggested that having more women on corporate boards improves monitoring and control, which mitigates agency problems and thus leads to more sustainable performance for businesses. Furthermore, scholars have pointed out that women directors enhance the sustainability performance of corporates by offering distinct resources such as unique perspectives, experiences, knowledge, and skills (Galbreath, 2011).

However, it does not mean that the board should not include men at all. There are also the findings that the presence of male directors in boardrooms is positively associated with high levels of digital investment (Achim and Văidean *et al.*, 2022), which is crucial for sustainable development. Therefore, such findings further emphasize the importance of gender diversity within the board for sustainable performance.

Recently, the role of gender diversity in boardrooms has become an interesting topic in the banking sector (Galletta and Mazzù *et al.*, 2022; Kara and Nanteza *et al.*, 2022). Previous literature suggested that BGD has a positive impact on bank performance (Cardillo and Onali *et al*., 2021; García-Meca and García-Sánchez *et al.*, 2015). For instance, based on the data of listed European banks, Cardillo and Onali *et al*., (2021) concluded that female participation on boards positively impact bank financial performance, as measured by Tobin's Q and ROA, supporting the notion that female directors have better monitoring than their male counterparts. Aside from financial performance, empirical studies also show that gender diversity on bank boards helps reduce financial fragility (Farag and Mallin, 2017), improve efficiency (Ramly and Chan *et al.*, 2017), decrease excessive risk-taking (Menicucci and Paolucci, 2022.), increase bank stability, and reduce the non-performing loan ratio (Sahay and Cihak *et al.*, 2017). Moreover, Arnaboldi and Casu *et al.* (2020) analyzed data from 83 listed banks across 21 European countries over the period 2007-2018 and found that banks with more gender diversity on boards are more rule-abiding and thus are subject to less severe financial penalties. Furthermore, other studies found that banks with a higher percentage of female directors enhance the banks' reputation (Baselga-Pascual and Trujillo-Ponce *et al.*, 2018). All of these outcomes from BGD may contribute positively to the bank's sustainability performance. Indeed, Galletta and Mazzù *et al.* (2022) examined the impact of the presence of women in the boardroom on bank financial and sustainability performance by using 808 bank-year observations from a sample of 48 countries during the 2011–2019 period. The findings of this study suggest that having more women on bank boards can help the bank enhance value creation, which could lead to better economic and sustainable outcomes.

However, there are still a relatively limited number of empirical studies that explore the BGD-sustainability relationship in both non-financial and/or financial sectors. Most of these studies also focused on sustainable performance in terms of non-financial parameters such as social and/or environmental performance (e.g., Pareek and Sahu, 2021 in non-financial firms; Galletta and Mazzù *et al.*, 2022 in banks), not in terms of long-term financial performance like SGR. Actually, there are surprisingly few studies conducted on the topic of gender diversity and SGR worldwide (Ain and Yuan *et al.*, 2022). A recent study by Ain and Yuan *et al.* (2022) on the link between BGD and SGR shows a positive relationship, but in non-financial firms. Nonetheless, based on the above argument and theoretical background, we also expect a positive impact of BGD on firm sustainable performance in terms of long-term profitability measures such as SGR. Therefore, we propose the main hypothesis as follows:

H1: Board gender diversity has a positive impact on a bank's sustainable growth rate.

II. Methodology

To investigate the effect of board gender diversity on firm sustainable growth, we employ the following baseline model:

$$SGR_{i,t} = \alpha + \beta(BGD)_{i,t} + \sum \theta_j \, Controls_{i,t} + \varepsilon_{i,t} \quad (1)$$

where subscripts *i* and *t* denote firm and year respectively, α is the constant, and ε_{it} is the random error term. The dependent variable is the sustainable growth rate (SGR) of banks, which measures the banks' long-term profitability. Following previous studies by Ain and Yuan *et al.* (2022); Junaidi and Sulastri *et al.* (2019); Mukherjee and Sen (2019, 2022), we use the two most widely used sustainable growth rate models of Higgins (1977) and Horne (1987) to measure SGR in this study. Higgins first proposed the concept of a SGR from the perspective of financial management, focusing on the maximum rate at which a business can grow without depleting all its financial resources or changing the current

financial structure. Alternatively, Van Horn argued that a SGR reflects the target valuation rather than the real value, highlighting that the maximum annual growth rate of a firm's sales at a target operating and debt-to-dividend ratio is a SGR.

BGD is our main variable of interest in the present study. Several proxies identified in the literature are used to calculate BGD, such as the percentage of female directors on boards (PerFem), the Blau index, and the Shannon index (Ain and Yuan *et al.*, 2022). With respect to the control variables, we classify them into one of two categories based on the works of Ain and Yuan *et al.* (2022), Galletta and Mazzù *et al.* (2022), Mukherjee and Sen (2019). The first category includes board characteristics such as board size (BSize) and board independence (BInd). The second set is the bank's characteristic variables like leverage (Lev), firm size (FSize), and efficiency (Eff). Table I presents the variables and their respective definitions.

TABLE I: VARIABLE DEFINITIONS

Variables	Definition
Sustainable Growth Rate (SGR)	
Higgins's SGR (SGR1)	SGR1 = Profit margin × Asset Turnover Ratio × Asset to Equity × Retention rate
Van Horne's SGR (SGR2)	SGR2 = (Profit margin × Asset Turnover Ratio × Asset to Equity × Retention rate)/(1 − Profit margin × Asset Turnover Ratio × Asset to Equity × Retention rate)
Board gender diversity	
Percentage of female directors (PerFem)	Ratio of female directors to total number of directors on the board
Blau index (Blau)	An index to measure gender diversity: Denoted as $1-\sum_{i=1}^{n} P_i^2$ where *Pi* is the percentage of each category and *n* = 2 [female (male)]. The range of values is from 0 to a maximum of 0.5.
Shannon index (Shannon)	An index to measure gender diversity: Denoted as $-\sum_{i=1}^{n} P_i lnP_i$ where *Pi* is the percentage of each category and *n* = 2 [female (male)]. The range of values is from 0 to a maximum of 0.69.
Control variables	
Board size (BSize)	Natural logarithm of the total number of directors on the board
Board independence (BInd)	Percentage of non-executive and/or independent directors on the board
Firm Size (FSize)	Natural logarithm of total assets
Leverage (Lev)	Ratio of total debt scaled by total assets at the end of the year
Efficiency (Eff)	Operating expenses/Total income

Our initial sample includes all commercial banks in Vietnam over the 2010–2020 period. The financial data is derived from published financial statements of banks that have been validated by external auditors. The data on board attributes, including gender and the number of non-executive/executive directors and female executive directors, is manually obtained from annual reports and other published materials before and/or after shareholders' meetings. Our final sample comprises 318 yearly observations from 30 commercial banks (both listed and unlisted) after eliminating observations with missing values.

In line with the previous research, we conduct panel data analysis using both Fixed Effects Models (FEM) and Random Effects Models (REM). The REM model assumes that individual firms' intercepts are randomly distributed. Unlike REM, the FEM model takes into account heterogeneity or individuality that can exist among firms by allowing each firm to have its own (fixed) intercept value. We also use the Hausman test to determine whether to use a fixed- or random-effects model in our analysis. We further examine the presence of heteroskedasticity and autocorrelation by employing the modified Wald test and the Wooldridge test, respectively. Standard errors will be corrected using the Driscoll and Kraay (1998) method if the selected model has heteroscedasticity and/or autocorrelation issues.

In addition, we use various techniques to address potential endogeneity issues and evaluate the robustness of the results. Specifically, we perform different regression methods, such as regression with lagged independent variables and a two-step system Generalized Method of Moments (GMM) model (Blundell and Bond, 1998). We also rerun the model using alternative measures of BGD.

III. RESULTS AND DISCUSSION

A. Descriptive Statistics

Table II presents descriptive statistics for the variables used in this study. As can be seen, the average board size of banks ranges from 7 to 8 members, with non-executive directors making up 85.2% of the membership. The results also indicate that the average bank has a high level of leverage at 90.7%. In terms of gender diversity on boards, female representation among board members averages 18.5% across the entire data set. Regarding bank sustainable growth, SGR1 has a mean value of 0.063 and a standard deviation of 0.064. In comparison, the average value of SGR2 in the sample is 0.073, with a standard deviation of 0.080.

TABLE II: DESCRIPTIVE STATISTICS

Variable	Obs	Mean	Std. Dev.	Min	Max
SGR1	318	0.063	0.064	−0.122	0.258
SGR2	318	0.073	0.080	−0.109	0.348
PerFem	318	0.185	0.160	0	0.625
Blau	318	0.250	0.183	0	0.500
Shannon	318	0.377	0.264	0	0.693
Bsize (No.)	318	7.198	1.721	4	15
BInd	318	0.852	0.121	0.500	1
Fsize	318	18.469	1.131	15.923	21.140
Lev	318	0.907	0.041	0.745	0.974
Eff	318	0.545	0.152	0.225	1.115

B. The Impact of BGD on SGR

The findings of the relationship between BGD and banks' sustainable growth are summarized in Table III. In columns 1 to 2, we set Higgins's SGR (SGR1) as a dependent variable, and in columns 3 to 4, we adopt Van Horne's SGR (SGR2). The outcomes of the Hausman test for SGR1 and SGR2 models indicate that the FEM is appropriate and should be used for this research. Additionally, the *p*-values of less than 1% from the Modified Wald test for both SGR1 and SGR2 suggest heteroskedasticity exists in the models. Similarly, the *p*-values for the Woodridge test are less than 1%, so there is an autocorrelation issue in the models' error term. In order to address these issues and enhance estimation efficiency, we use the FEM model with Driscoll and Kraay standard errors. Accordingly, the results of this model (reported in columns 2

and 4 of Table III) serve as the foundation for the analysis.

Table III shows that banks with female directors in the boardroom do outperform those with all-male boards, as indicated by the positive and statistically significant coefficients for BGD measured by percentage of female directors (PerFem). This holds true for both measures of sustainable growth (SGR1 and SGR2) for banks. Specifically, female board members positively influence the banks' sustainable performance as measured by SGR1 with a significance of 1% (column 2). In the same vein, the results in column 4 reveal that female board representation is associated with a higher SGR2 growth rate for banks at a significance level of 1%. These results provide support for our main hypothesis H1 and appear to be in line with those of other studies like the one conducted by Ain and Yuan *et al.* (2022) in China. These findings also lend support to the perspectives of agency theory and resource dependence theory, suggesting that the appointment of women to the board of directors can improve monitoring and access to critical resources, which may in turn foster sustainable performance.

TABLE III: THE IMPACT OF BGD ON SGR

	SGR1		SGR2	
	(1) REM	(2) FEM (Drisc/Kraay)	(3) REM	(4) FEM (Drisc/Kraay)
PerFem	0.042*	0.067***	0.049*	0.080***
	(1.89)	(8.54)	(1.72)	(8.08)
Bsize	−0.048***	−0.046***	−0.062***	−0.060***
	(−3.37)	(−3.47)	(−3.44)	(−3.74)
BInd	0.043	0.032*	0.052	0.039*
	(1.62)	(2.19)	(1.55)	(1.87)
Fsize	0.037***	0.051***	0.046***	0.064***
	(7.78)	(5.33)	(7.66)	(4.96)
Lev	−0.021	−0.085	−0.053	−0.137
	(−0.22)	(−0.83)	(−0.43)	(−0.93)
Eff	−0.167***	−0.169***	−0.205***	−0.210***
	(−7.71)	(−9.32)	(−7.51)	(−9.16)
Constant	−0.457***	−0.664***	−0.546***	−0.809***
	(−5.42)	(−5.84)	(−5.12)	(−5.91)
Observations	318	318	318	318
R-squared	0.402	0.413	0.393	0.405
Hausman		27.67***		27.60***
Modified Wald		728.19***		996.78***
Wooldridge		14.71***		17.10***

Notes: Driscoll–Kraay standard errors are robust to heteroscedasticity and autocorrelation. The t-statistics are in parentheses. The significance level is denoted as follows: ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$.

With regard to the control variables, we confirm previous findings of significant relationships between board size and board independence and firms' sustainable growth. Particularly, consistent with Ain and Yuan *et al.* (2022) and Huang and Ying *et al*. (2019), we find that a larger board size tends to reduce the sustainable growth of the firm. However, the impact of board independence on firms' SGR is positive and statistically significant at the 10% level, which is in accordance with the findings of Ain and Yuan *et al.* (2022), Liu and Miletkov (2015). This indicates that independent boards improve board functioning and efficiency through their advice and oversight practices, allowing businesses to grow in the long run. For the firm characteristics, we document that an increase in firm size appears to enhance firms' sustainable growth (Ain and Yuan *et al.*, 2022; Mukherjee and Sen, 2022), but high leverage does not have any significant impact on sustainable growth (Mukherjee and Sen, 2019). In addition, as efficiency (Eff) is calculated by the ratio of operating expenses to total income, which is an inverse measure of bank efficiency, the negative and significant coefficients for Eff in both SGR1 and SGR2 models suggest that banks with high efficiency have better sustainable growth, which is similar to what Junaidi and Sulastri *et al.* (2019) found in the banking industry in Indonesia.

C. Robustness Tests

1) Addressing endogeneity: We use the FEM model with lagged independent variables and the two-step system GMM model to address potential endogeneity. The relationship between BGD and sustainable performance may be complicated by the endogenous nature of governance mechanisms. Three potential sources of endogeneity in corporate finance research—simultaneity, unobservable heterogeneity, and dynamic endogeneity—were thoroughly discussed by Wintoki and Linck *et al*. (2012). The endogenous nature of the board structure variables causes some issues with the estimation techniques, which prevents determining the true impact of governance practices (Adams and Hermalin *et al*., 2010). Indeed, the likelihood of women joining boards of directors depends on a variety of organizational factors (Hillman and Shropshire *et al*., 2007), some of which may affect firm performance. Similarly, women's interest in serving on boards and boards' desire to recruit women may be influenced by a company's performance (Adams and Ferreira, 2009), raising the possibility of endogeneity problems.

First, our study controls for reverse causality (as a simultaneous determination) using the lagged values of the independent variables in regression models. Table IV presents the results of FEM regression models for both SGR measures with a one-year lag (columns 1 and 2) and a two-year lag (columns 3 and 4) of explanatory variables. As expected, the positive and high significant coefficients for the PerFem variable across all the models ($p < 0.01$ as reported in columns 1 to 4) reveal a positive relationship between BGD and banks' SGR, which confirms our main findings previously shown in Table III.

Second, we employ the two-step system GMM model to further deal with different sources of endogeneity. The outcomes of the system GMM estimations are displayed in columns 5 and 6 of Table IV. In order to assess the validity of this method, we use the AR(1) and AR(2) tests for first- and second-order autocorrelations, and the Hansen J-statistic test for the over-identifying restrictions. All of the outcomes for these tests, i.e., significance in AR(1) and no significance in AR(2) and Hansen tests, indicate that the GMM models' diagnostics are satisfied, which could lead to reliable results. The system GMM results point out that the presence of female directors on boards has a positive and significant impact on both SGR1 and SGR2 measures ($p < 0.05$ as reported in columns 5 and 6 of Table IV). Hence, we conclude that the findings remain relatively unchanged from the main findings in Table III.

TABLE IV: ENDOGENEITY—FEM WITH LAGGED INDEPENDENT VARIABLES AND TWO-STEP SYSTEM GMM

	FEM (Driscoll-Kraay)				Two-step Sys-GMM	
	(1)	(2)	(3)	(4)	(5)	(6)
Variables	SGR1	SGR2	SGR1	SGR2	SGR1	SGR2
L.SGR1					0.874***	
					(7.22)	
L.SGR2						0.897***
						(7.22)
PerFem	0.069***	0.084***	0.056***	0.065***	0.080**	0.090**
	(6.26)	(6.06)	(4.05)	(3.94)	(2.01)	(2.00)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Constant	−0.863***	−1.064***	−0.977***	−1.225***	−0.277	−0.311
	(−5.18)	(−4.97)	(−8.08)	(−7.55)	(−0.97)	(−0.94)
1-year lag	Yes	Yes	No	No		
2-year lag	No	No	Yes	Yes		
Obs.	288	288	258	258	288	288
AR(1) test (*p*-value)					0.012	0.010
AR(2) test (*p*-value)					0.719	0.834
Hansen test (*p*-value)					0.378	0.379

Notes: This table presents the results of FEM with lagged independent variables and two-step system GMM models for the impact of gender diversity on sustainable growth of banks. The t-statistics or z-statistics are in parentheses. The significance level is denoted as follows: ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$.

2) Using alternative measures of board gender diversity: We re-run the main model with alternative measures of BGD to ensure the robustness of our findings. In particular, we use the Blau index and Shannon diversity index instead of the percentage of female directors to measure the gender diversity on boards. All results reported in Table V (Blau in columns 1 and 2 and Shannon in columns 3 and 4) provide strong confirmation of the positive association between BGD and sustainable growth across all regression models (significant at $p < 0.05$ or better). Therefore, this analysis provides further evidence in favor of hypothesis H1.

TABLE V: ALTERNATIVE MEASURES OF BOARD GENDER DIVERSITY — BLAU INDEX AND SHANNON INDEX

	FEM (Driscoll-Kraay)			
	(1)	(2)	(3)	(4)
Variables	SGR1	SGR2	SGR1	SGR2
Blau	0.042***	0.050***		
	(4.37)	(4.06)		
Shannon			0.023**	0.027**
			(2.78)	(2.58)
Bsize	−0.049***	−0.063***	−0.049***	−0.063***
	(−3.64)	(−3.90)	(−3.66)	(−3.90)
Bind	0.033*	0.040	0.033*	0.040
	(2.08)	(1.78)	(2.02)	(1.74)
Fsize	0.051***	0.064***	0.052***	0.065***
	(5.30)	(4.95)	(5.29)	(4.94)
Lev	−0.081	−0.132	−0.081	−0.132
	(−0.74)	(−0.85)	(−0.72)	(−0.83)
Eff	−0.168***	−0.209***	−0.166***	−0.207***
	(−9.58)	(−9.40)	(−9.56)	(−9.41)
Constant	−0.662***	−0.807***	−0.666***	−0.812***
	(−6.10)	(−6.17)	(−6.21)	(−6.29)
Observations	318	318	318	318
R-squared	0.406	0.398	0.404	0.395

Notes: Driscoll–Kraay standard errors are robust to heteroscedasticity and autocorrelation. The t-statistics are in parentheses. The significance level is denoted as follows: ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$.

IV. CONCLUSIONS AND FUTURE DIRECTIONS

In this study, we explore whether gender diversity on boards exerts a significant influence on sustainable growth for banks in an emerging economy. After excluding all missing data, our final sample includes 318 observations from 30 commercial banks in Vietnam from 2010 to 2020. Based on the diagnostic test results such as the Modified Wald and Wooldridge tests, we finally apply the FEM model with Driscoll and Kraay standard errors to address the problems of heteroskedasticity and autocorrelation. Adopting two measures of sustainable growth (i.e., Higgins's SGR and Van Horne's SGR), the results of the study show that banks with higher gender diversity on their boards achieve greater sustainable growth. These results are in line with some prior studies and suggest that the presence of female leaders and greater gender diversity in the boardroom have a significant positive effect on corporate sustainable performance (Ain and Yuan *et al.*, 2022; Galletta and Mazzù *et al.*, 2022; Zhu and Husnain, 2022). Our findings are still robust when using different methods such as the FEM model with lagged independent variables and the system GMM model to control for potential endogeneity, as well as alternative measures for BGD. The results also provide additional empirical evidence in support of agency and resource dependence theories.

Our empirical evidence provides helpful guidelines for policymakers, business leaders, and academics in Vietnam on the theme of gender diversity in corporate boards, especially in banking. There has been a growing movement toward mandating a certain percentage of women on corporate boards in both developed and some developing economies. The findings of this research could be used to support the establishment of guidelines for boosting the number of women on the boards of Vietnamese companies and commercial banks in particular. Business leaders need to realize that a gender-diverse board is essential for flourishing and sustainable growth. Accordingly, banks should promote board gender diversity by appointing more women to their boards.

Finally, this study has some limitations that could lead to new avenues of investigation. First, future studies can analyze the linkage between board gender diversity and sustainable growth rate by considering the nature and demographic features of the women directors, such as education level, age, or academic background, which could impact the sustainability performance of banks. Second, we recommend future researchers should utilize cross-country samples of banking institutions to compare and analyze how the presence of women on boards affects sustainable performance in countries with mandatory quotas for women on boards versus those that use a voluntary system for gender diversity.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

AUTHOR CONTRIBUTIONS

Pham Tien Minh conducted the research, analyzed the data, and contributed to the methodology; Bui Huy Hai Bich did the literature review, collected and processed the data, and contributed to the discussion; Pham Tien Minh and Bui Huy Hai Bich wrote the paper; all authors had approved the final version.

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REFERENCES

Achim, M. V., Văidean, V. L., Popa, A. I. S., & Safta, L. I. 2022. The impact of corporate governance on the digitalization process: empirical evidence for the Romanian companies. ***Digital Finance,*** 4: 313–340.

Adams, R. B., & Ferreira, D. 2009. Women in the boardroom and their impact on governance and performance. ***Journal of Financial Economics,*** 94(2): 291–309.

Adams, R. B., Hermalin, B. E., & Weisbach, M. S. 2010. The role of boards of directors in corporate governance: A conceptual framework and survey. ***Journal of Economic Literature,*** 48(1): 58–107.

Ain, Q. U., Yuan, X., Javaid, H. M., & Naeem, M. 2022. Board gender diversity and sustainable growth rate: Chinese evidence. ***Economic Research-Ekonomska Istraživanja,*** 35(1): 1364–1384.

Ali, M., Ng, Y. L., & Kulik, C. T. 2014. Board age and gender diversity: A test of competing linear and curvilinear predictions. ***Journal of Business Ethics,*** 125(3): 497–512.

Arnaboldi, F., Casu, B., Kalotychou, E., & Sarkisyan, A. 2020. The performance effects of board heterogeneity: what works for EU banks? ***The European Journal of Finance,*** 26(10): 897–924.

Bannò, M., & Nicolardi, V. 2020. Women's participation on boards of directors: the effects on business growth and profitability. ***Sinergie Italian Journal of Management,*** 38(1): 161–179.

Baselga-Pascual, L., Trujillo-Ponce, A., Vähämaa, E., & Vähämaa, S. 2018. Ethical reputation of financial institutions: Do board characteristics matter? ***Journal of Business Ethics,*** 148(3): 489–510.

Blundell, R., & Bond, S. 1998. Initial conditions and moment restrictions in dynamic panel data models. ***Journal of Econometrics,*** 87(1): 115–143.

Brahma, S., Nwafor, C., & Boateng, A. 2021. Board gender diversity and firm performance: The UK evidence. ***International Journal of Finance & Economics,*** 26(4): 5704–5719.

Cardillo, G., Onali, E., & Torluccio, G. 2021. Does gender diversity on banks' boards matter? Evidence from public bailouts. ***Journal of Corporate Finance,*** 71: 1–33.

Carmo, C., Alves, S., & Quaresma, B. 2022. Women on boards in portuguese listed companies: Does gender diversity influence financial performance? ***Sustainability,*** 14(10): 1–21.

Đặng, R., Houanti, L. H., Reddy, K., &Simioni, M. 2020. Does board gender diversity influence firm profitability? A control function approach. ***Economic Modelling,*** 90: 168–181.

Driscoll, J. C., & Kraay, A. C. 1998. Consistent covariance matrix estimation with spatially dependent panel data. ***Review of Economics and Statistics,*** 80(4):549–560.

Elmagrhi, M. H., Ntim, C. G., Elamer, A. A., &Zhang, Q. 2019. A study of environmental policies and regulations, governance structures, and environmental performance: The role of female directors. *Business* ***Strategy and the Environment,*** 28(1): 206–220.

Farag, H., & Mallin, C. 2017. Board diversity and financial fragility: Evidence from European banks. ***International Review of Financial Analysis,*** 49: 98–112.

Galbreath, J. 2011. Are there gender-related influences on corporate sustainability? A study of women on boards of directors. ***Journal of Management & Organization,*** 17(1): 17–38.

Galletta, S., Mazzù, S., Naciti, V. & Vermiglio, C. 2022. Gender diversity and sustainability performance in the banking industry. ***Corporate Social Responsibility and Environmental Management,*** 29(1): 161–174.

García-Meca, E., García-Sánchez, I. M., &Martínez-Ferrero, J. 2015. Board diversity and its effects on bank performance: An international analysis. ***Journal of banking & Finance,*** 53: 202–214.

Gul, F. A., Srinidhi, B., & Ng, A. C. 2011. Does board gender diversity improve the informativeness of stock prices? ***Journal of Accounting and Economics,*** 51(3): 314–333.

Hillman, A. J., Shropshire, C., & Cannella Jr, A. A. 2007. Organizational predictors of women on corporate boards. ***Academy of Management Journal,*** 50(4): 941–952.

Higgins, R. C. 1977. How much growth can a firm afford? ***Financial Management,*** 6(3): 7–16.

Horne, J. C. 1987. Sustainable growth modeling. ***Journal of Corporate Finance,*** 2(3): 19–26.

Huang, L., Ying, Q., Yang, S., & Hassan, H. 2019. Trade credit financing and sustainable growth of firms: Empirical evidence from China. ***Sustainability,*** 11(4): 1–20.

Ionascu, M., Ionascu, I., Sacarin, M., & Minu, M. 2018. Women on boards and financial performance: Evidence from a European emerging market. ***Sustainability,*** 10(5): 1–18.

Jensen, M. C., &Meckling, W. H. 1976. Theory of the firm: Managerial behavior, agency costs and ownership structure. ***Journal of Financial Economics,*** 3(4): 305–360.

Junaidi, S., Sulastri, S., Isnurhadi, I., & Adam, M. 2019. Liquidity, asset quality, and efficiency to sustainable growth rate for banking at Indonesia Stock Exchange. ***Jurnal Keuangan dan Perbankan,*** 23(2): 308–319.

Jyothi, P. & Mangalagiri, J. 2019. Would firm performance be better with women directors? Evidence from India. ***Vision,*** 23(2): 180–188.

Kara, A., Nanteza, A., Ozkan, A., &Yildiz, Y. 2022. Board gender diversity and responsible banking during the Covid-19 pandemic. ***Journal of Corporate Finance,*** 74: 1–27.

Liu, Y., Miletkov, M. K., Wei, Z., & Yang, T. 2015. Board independence and firm performance in China. ***Journal of Corporate Finance,*** 30: 223–244.

Menicucci, E., &Paolucci, G. 2022. Gender diversity and bank risk-taking: an empirical investigation in Italy. ***Corporate Governance,*** 22(2): 317–339.

Mukherjee, T., & Sen, S. S. 2019. Impact of corporate governance on corporate sustainable growth. ***International Research Journal of Business Studies,*** 12(2): 167–184.

Mukherjee, T., & Sen, S. S. 2022. Impact of CEO attributes on corporate reputation, financial performance, and corporate sustainable growth: evidence from India. ***Financial Innovation,*** 8(1): 1-50.

Owen, A. L., & Temesvary, J. 2018. The performance effects of gender diversity on bank boards. ***Journal of Banking & Finance,*** 90: 50–63.

Pathan, S., & Faff, R. 2013. Does board structure in banks really affect their performance? ***Journal of Banking & Finance,*** 37(5): 1573–1589.

Pareek, R., Sahu, T. N., & Gupta, A. 2021. Gender diversity and corporate sustainability performance: Empirical evidence from India. ***Vilakshan-XIMB Journal of Management.***

Ramly, Z., Chan, S. G., Mustapha, M. Z., & Sapiei, N. S. 2017. Women on boards and bank efficiency in ASEAN-5: the moderating role of the independent directors. ***Review of Managerial Science,*** 11(1): 225–250.

Sahay, R., Cihak, M., N'Diaye, P. M., Barajas, A., Kyobe, A. J., Mitra, S., Mooi, Y. N., & Yousefi, S. R. 2017. Banking on Women Leaders: A Case for More? ***IMF Working Papers,*** 2017(199): 1–38.

Vo, X. V. 2017. How does the stock market value bank diversification? Evidence from Vietnam. ***Finance Research Letters,*** 22: 101–104.

Wintoki, M. B., Linck, J. S., & Netter, J. M. 2012. Endogeneity and the dynamics of internal corporate governance. ***Journal of Financial Economics,*** 105(3): 581–606.

Zhu, C., Husnain, M., Ullah, S., Khan, M. T., & Ali, W. 2022. Gender diversity and firms' sustainable performance: Moderating role of CEO duality in emerging equity market. ***Sustainability,*** 14(12): 1–26.